WITH THIS IN MIND, WE CLAIM:

1. A method for stabilizing CD measurements of a photoresist feature on a surface of a semiconductor wafer portion in a CD-SEM, comprising the steps of:

installing said wafer portion in said CD-SEM;

exposing said photoresist feature to a pre-dose of energy selected from the group consisting of: radiation and an energetic particle beam, for a specified time period; and

following said step of exposing said photoresist feature to said pre-dose of energy, measuring said CD of said photoresist feature.

2. The method of claim 1, wherein said step of exposing said photoresist feature to a pre-dose of energy comprises exposing said photoresist feature to UV radiation.

3. The method of claim 1, wherein said step of exposing said photoresist feature to a pre-dose of energy comprises exposing said photoresist feature to a charged particle beam.

4. The method of claim 3, wherein said charged particle beam is selected from the group consisting of: e-beam, ion beam, and plasma.

5. The method of claim 4, wherein said charged particle beam is an e-beam.

6. The method of claim 5, wherein said photoresist feature is an ArF resist feature.

7. The method of claim 6, wherein said step of exposing said ArF resist feature to a pre-dose of energy comprises exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam at a beam Landing Energy (LE), a Beam Current (BC) and a magnification, for a specified time period.

8. The method of claim 7, wherein said pre-dose is sufficiently high to pre-shrink said ArF resist feature such that subsequent CD measurements of said ArF resist feature remain substantially stable.

9. The method of claim 8 wherein said pre-dose is on the order of 1.5 E-10 Coulomb.

10. The method of claim 8, wherein said step of exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam comprises interspersing a flooding step at a first beam Landing Energy (LE), a first Beam Current (BC) and a first magnification, with an imaging step at a second beam Landing Energy, a second Beam Current, and a second magnification.

11. The method of claim 10, wherein said step of exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam by interspersing a flooding step at a first beam Landing Energy (LE), a first Beam Current (BC) and a first magnification, with an imaging step at a second beam Landing Energy, a second Beam Current, and a second magnification, includes beam multiplexing.

12. The method of claim 11, wherein said beam multiplexing is operated in charge compensation mode wherein imaging is performed at a LE value having an electron yield greater than 1, and flooding is performed at a LE value having a yield less than 1, such that the negative charge accumulated during the flood step is adjusted to balance the positive charge accumulation during the imaging step.

13. The method of claim 7, wherein said pre-dose is a minimal trigger dose in the range between 10^{-14}C and 10^{-12} C, and further including the step of waiting for a stabilizing period of time after said pre-dose before performing said CD measurements.

14. The method of claim 13, wherein said stabilizing period of time is in the range between 8 and 15 seconds

15. A method for stabilizing CD measurements of a photoresist feature on a surface of a semiconductor wafer portion in a CD-SEM, comprising the steps of:

installing said wafer portion in said CD-SEM;

performing said CD measurements by measuring secondary electrons emitted due to an incident electron beam, said measuring being performed by interspersing a flooding step at a first beam Landing Energy (LE), a first Beam Current (BC) and a first magnification, with an imaging step at a second beam Landing Energy, a second Beam Current, and a second magnification, said first beam Landing Energy and said second beam Landing Energy being independently adjusted to prevent charging of said photoresist feature.

16. The method of claim 15, wherein said photoresist is an ArF resist.

17. The method of claim 16, wherein said first LE is 0V, said first BC is 30 pA, said second LE is 200 eV, and said second BC is 30 pA.

18. The method of claim 16, further including, before said step of performing said CD measurements by measuring secondary electrons emitted due to an incident electron beam, the step of exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam according to the method of claim 8.

19. The method of claim 16, further including, before said step of performing said CD measurements by measuring secondary electrons emitted due to an incident electron beam, the step of exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam according to the method of claim 9.

20. The method of claim 16, further including, before said step of performing said CD measurements by measuring secondary electrons emitted due to an incident electron beam, the step of exposing said ArF resist feature to a pre-dose of energetic electrons from an electron beam according to the method of claim 12.